LISTING OF THE CLAIMS

<u>What is claimed is:</u>

1-53.   (Canceled)

54.   (Previously Presented)   A monitoring system for use in estimating the existence of cavitation in a device, the monitoring system comprising:

a processor;

a memory that stores a characteristic curve for the device;

a collection routine adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device;

a monitoring routine adapted to be executed on the processor that uses the one or more operating parameters and the characteristic curve to estimate the presence of cavitation within the device; and

wherein the monitoring routine is adapted to determine a net positive suction head available in the device and compare the net positive suction head available with a net positive suction head required associated with the device.

55.   (Previously Presented)   The monitoring system of claim 54, wherein the monitoring routine is further adapted to calculate the ratio of the net positive suction head available and the net positive suction head required for the device and to compare the ratio to a predetermined threshold.

56.   (Previously Presented)   A monitoring system for use in estimating the existence of cavitation in a device, the monitoring system comprising:

a processor;

a memory that stores a characteristic curve for the device;

a collection routine adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device;

a monitoring routine adapted to be executed on the processor that uses the one or more operating parameters and the characteristic curve to estimate the presence of cavitation within the device; and

wherein the characteristic curve defines a net positive suction pressure required for the device.

57.   (Previously Presented)   A monitoring system for use in estimating the existence of cavitation in a device, the monitoring system comprising:

a processor;

a memory that stores a characteristic curve for the device;

a collection routine adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device;

a monitoring routine adapted to be executed on the processor that uses the one or more operating parameters and the characteristic curve to estimate the presence of cavitation within the device; and

wherein the characteristic curve is a voltage-current characteristic curve for the device, wherein the one or more operating parameters are associated with electrical operating parameters of the device and wherein the monitoring routine is adapted to use the electrical operating parameters of the device to detect whether the device is operating in accordance with the voltage-current characteristic curve of the device.

58.   (Previously Presented)   The monitoring system of claim 57, wherein the voltage-current characteristic curve is a voltage-current characteristic curve for the device operating without cavitation.

59.   (Previously Presented)   The monitoring system of claim 57, wherein the voltage-current characteristic curve is a voltage-current characteristic curve for the device operating with cavitation.

60.   (Previously Presented)   The monitoring system of claim 57, wherein the voltage-current characteristic curve is a voltage-current characteristic curve for the device including high frequency fluctuations.

61.   (Currently Amended) A field device for use in a process plant, the field device comprising:

a processor;

a memory;

a collection routine stored in the memory and adapted to be executed on the processor to collect one or more operating parameters associated with the process plant operation;

a monitoring routine stored in the memory and adapted to be executed on the processor to use the one or more operating parameters to estimate the presence of cavitation in the process plant;

wherein the monitoring routine is adapted to use the operating parameters to detect a degradation in the operational performance of a device in the process plant to estimate the presence of cavitation within the process plant, a characteristic curve associated with the device is stored in the memory, and the monitoring routine is adapted to detect the degradation in performance based on the characteristic curve; and

wherein the characteristic curve is a ~~voltage-amplitude~~ <u>voltage-current</u> curve.

62.   (Previously Presented)   A field device for use in a process plant, the field device comprising:

a processor;

a memory;

a collection routine stored in the memory and adapted to be executed on the processor to collect one or more operating parameters associated with the process plant operation;

a monitoring routine stored in the memory and adapted to be executed on the processor to use the one or more operating parameters to estimate the presence of cavitation in the process plant;

wherein the monitoring routine is adapted to use the operating parameters to detect a degradation in the operational performance of a device in the process plant to estimate the presence of cavitation within the process plant, a characteristic curve associated with the device is stored in the memory, and the monitoring routine is adapted to detect the degradation in performance based on the characteristic curve; and

wherein the characteristic curve defines a net positive suction head required for the device.

63.   (Currently Amended) The field device of claim 69 62, wherein the monitoring routine is adapted to determine a net positive suction head available within the device from the operating parameters and to compare the net positive suction head available and net positive suction head required to estimate the existence of cavitation within the device.

64. (New) A method of detecting cavitation within a device operating in a process, the method comprising:

collecting one or more operating parameters associated with the device during operation of the device;

storing a characteristic curve for the device; and

automatically detecting the presence of cavitation within the device based on the one or more collected operating parameters wherein the step of automatically detecting includes the step of using the characteristic curve and alerting an operator to the presence of cavitation within the device;

wherein the step of automatically detecting includes the steps of determining a net positive suction head available in the device and comparing the net positive suction head available with a net positive suction head required for the device.

65. (New) The method of claim 64, wherein the step of automatically detecting further includes the step of calculating the ratio of the net positive suction head available and the net positive suction head required for the device and comparing the ratio to a predetermined threshold.

66. (New) A method of detecting cavitation within a device operating in a process, the method comprising:

collecting one or more operating parameters associated with the device during operation of the device;

storing a characteristic curve for the device; and

automatically detecting the presence of cavitation within the device based on the one or more collected operating parameters wherein the step of automatically detecting includes the step of using the characteristic curve and alerting an operator to the presence of cavitation within the device;

wherein the step of storing a characteristic curve includes the step of storing a characteristic curve that defines a net positive suction head required for the device.

67.   (New) A method of detecting cavitation within a device operating in a process, the method comprising:

collecting one or more operating parameters associated with the device during operation of the device;

storing a characteristic curve for the device; and

automatically detecting the presence of cavitation within the device based on the one or more collected operating parameters wherein the step of automatically detecting includes the step of using the characteristic curve and alerting an operator to the presence of cavitation within the device;

wherein the step of storing the characteristic curve includes the step of storing a voltage-current characteristic curve for the device, wherein the step of collecting includes the step of collecting one or more electrical operating parameters of the device and wherein the step of automatically detecting includes the step of using the electrical operating parameters of the device to detect whether the device is operating in accordance with the voltage-current characteristic curve of the device.

68.   (New) A monitoring system for use in detecting the presence of cavitation within a device in a plant having a processor, the monitoring system comprising:

a memory;

a collection routine stored in the memory and adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device; and

a monitoring routine stored in the memory and adapted to be executed on the processor to use the one or more operating parameters to estimate the presence of cavitation within the device;

wherein a characteristic curve associated with the device is stored in the memory, and the monitoring routine is adapted to detect the degradation in performance based on the characteristic curve and to alert an operator to the presence of cavitation within the device and wherein the characteristic curve is a voltage-current curve.

69.   (New) A monitoring system for use in detecting the presence of cavitation within a device in a plant having a processor, the monitoring system comprising:

a memory;

a collection routine stored in the memory and adapted to be executed on the processor to collect one or more operating parameters associated with the device during operation of the device; and

a monitoring routine stored in the memory and adapted to be executed on the processor to use the one or more operating parameters to estimate the presence of cavitation within the device;

wherein a characteristic curve associated with the device is stored in the memory, and the monitoring routine is adapted to detect the degradation in performance based on the characteristic curve and to alert an operator to the presence of cavitation within the device and wherein the characteristic curve defines a net positive suction head required for the device.

70.   (New) The monitoring system of claim 69, wherein the monitoring routine is adapted to determine a net positive suction head available within the device from the operating parameters and to compare the net positive suction head available and the net positive suction head required to estimate the presence of cavitation within the device.